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United States | Of volts and jolts

California has got really good at building giant batteries

At peak times they provide 30% of the state’s electricity



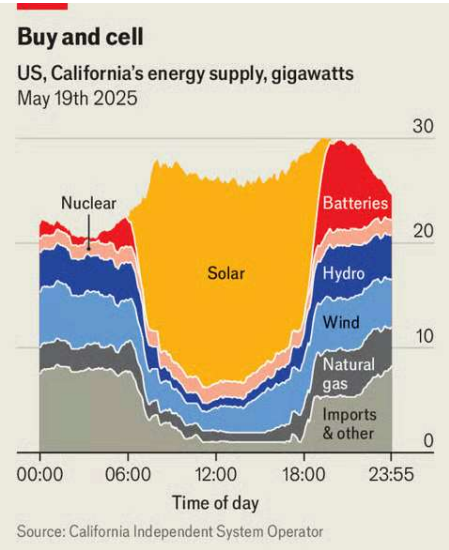
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A RENEWABLE ENERGY corridor is rising in eastern Kern County, California—where the Mojave Desert meets the Sierra Nevada mountains. Among the wind turbines, solar panels and Joshua Trees are giant batteries that look like shipping containers. Tesla workers tinker with the ones at the Eland solar and storage project, developed by Arevon Energy. They wear sun hats and boots and warn your correspondent to watch out for rattlesnakes.

The amount of battery power in California rose from 500 megawatts (MW) in 2018 to nearly 16,000 in 2025. Nearly a quarter of America’s battery capacity is in California alone, according to BloombergNEF, a research firm. Texas is not far behind. The battery boom tells a story of solar power’s supremacy. In the middle of the day, when the sun is strongest, as much as three-quarters of the state’s electricity can come from solar. Batteries charge in the afternoon when solar power is cheap, and release energy in the evenings when Californians get home and crank up their air conditioners. At their daily peak, around 8pm, batteries can provide as much as 30% of the state’s electricity.



California and Texas supercharged their battery power in ways that exemplify the states’ different approaches to energy markets. As per usual, the Golden State relied on regulation. In 2013 the California Public Utilities Commission (CPUC) ordered the state’s three big investor-owned utilities to procure 1,325 MW of energy storage by 2020 to help meet renewable targets and stabilise the grid. That goal was easily met. “Our system is much better positioned now, particularly to deal with extreme weather events”, says Elliot Mainzer, chief executive of the California Independent System Operator, which manages electricity across the state’s grid.

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In Texas, developers spied an opportunity for energy arbitrage. Operators could profit by buying cheap solar power and selling it at a higher cost later in the day. In 2024 Texas surpassed California to become the fastest-growing storage market.

The sun doesn’t always shine and the wind doesn’t always blow. Batteries help plug the gap. Mark Jacobson, an engineering professor at Stanford University, found that most days this year contained periods when solar, hydropower and wind, helped by batteries, met 100% of California’s demand—even though just 54% of the state’s electricity generation comes from

The battery bonanza may slow down. Donald Trump’s tariffs on China, where the battery supply chain is concentrated, and the gutting of the Inflation Reduction Act’s [clean-energy tax credits](#) would be a double whammy). These changes will hurt renewables’ ability to meet demand as power-hungry data centres come online, argues Kevin Smith, the boss of Arevon. Additionally, a recent fire at a battery facility in Moss Landing, on California’s coast, has spooked communities. One Monterey County supervisor called it “a Three Mile Island event”. Such incidents are relatively rare, but the CPUC has set new safety standards to try to assuage fears. After a few heady years, the battery industry may soon need a jolt. ■

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